

Calyptraea capensis Tomlin, 1931 (Gastropoda, Calyptraeidae), a valid species from South Africa

Calyptraea capensis Tomlin, 1931 (Gastropoda, Calyptraeidae), una especie válida de Sudáfrica

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RESUMEN

La especie del género *Calyptraea* de Sudáfrica considerada hasta la actualidad como *C. chinensis* se estudia y compara con otras especies de África occidental y meridional y de Europa. Se concluye que se trata de una especie diferente, cuyo nombre debe ser *Calyptraea capensis* Tomlin, 1931.

ABSTRACT

The species of the genus *Calyptraea* from South Africa up to now considered to be *C. chinensis* is studied and compared with other European and West and South African species. It is concluded that it is a different species whose name should be *Calyptraea capensis* Tomlin, 1931.

KEY WORDS: Calyptraeidae, *Calyptraea capensis*, *Calyptraea chinensis*, South Africa.

PALABRAS CLAVE: Calyptraeidae, *Calyptraea capensis*, *Calyptraea chinensis*, Sudáfrica.

INTRODUCTION

The study of the genus *Calyptraea* in the Eastern Atlantic (ROLÁN, 2004) has shown the existence of three species. In this work it was mentioned that the South African species known as *Calyptraea chinensis* Linné, 1758 could probably be a different species.

TOMLIN (1931) described *C. capensis*. Agreeing with Tomlin, TURTON (1932: 154) comments that the South African species called *C. chinensis* by several authors, should be called *C. capensis*. Nevertheless, this species has been recorded from South Africa in the most recent literature under the name *C. chinensis* (BARNARD, 1963; KENSLEY, 1973; KILBURN AND RIPPEY, 1982; STEYN AND LUSSI, 1998, among others.

In order to check if this species was different from those previously described in ROLÁN (2004), material from the Natal Museum was examined and compared with that previously studied and illustrated from the West African coasts. The conclusion is that it is a different species and which should not be called *C. chinensis* but *C. capensis*. The diagnostic characters of this species are shown in the present work.

Abbreviations:

NMW: National Museum of Wales,
Cardiff
NM: Natal Museum, Pietermaritzburg
sp: specimen with soft parts
s: shell

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RESULTS

Family CALYPTRAEIDAE Lamarck, 1809

Genus *Calyptraea* Lamarck, 1799

Calyptraea capensis Tomlin, 1931 (Figs. 1-13, 17-19)

Calyptraea capensis Tomlin, 1931. *Annals of the Natal Museum*, 6: p. 428, pl. 36, fig. 6. [Type locality: Jeffreys Bay, South Africa].

Calyptraea chinensis auct. non Linné, 1758.

Type material: Holotype (NMW 1955.158.01006, Figs. 7, 8).

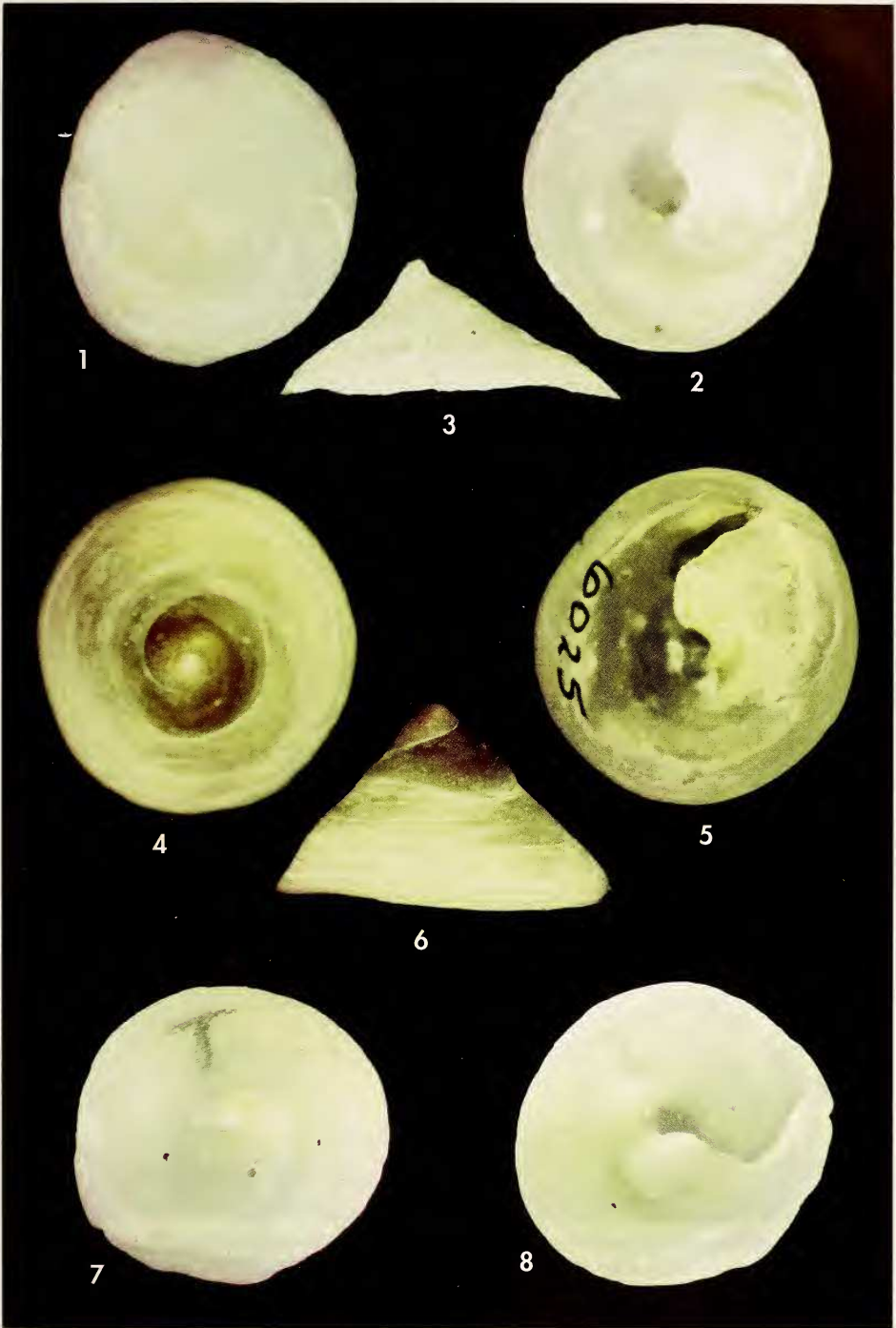
Material studied (all from NM): W1093, 1 sp, S. of Cape St. Blaize, 34° 43.5' S 22° 09' E, 88 m, NMDP (Africana) St. A16562D; S8593, 8 s, False Bay, off Falk Bay (34° 08.5' S 18° 28' E), 18 m, sand with *Pyura*, NMDP CD29 (10.IV.1991); 7316, 1 s, Port Elizabeth; Amsterdam Neek, on Zwartkops River; B2887, 47 s, Pondoland Coast, H. Becker coll (1978); B2886, 13 s, Port Alfred, H. Becker coll. (1978); D2211, 2 sp, Algoa Bay; 1 sp, living inside outer lip of hermit crab shell *Amalda obtusa*, 49 m, W of Stilbaai, 34° 29' S 21° 16' E; V603, 2 sp, W of Stilbaai, (34° 29' S; 21° 16' E), 49 m; B2886, 13 s, Port Alfred; 6025, 16 s, Saldanha Bay; 7316, 1 s, Port Elisabeth, Amsterdam Nock, Zwartkops River; E6457, 3 s, Cape Agulhas, Struinbari, Caravan Park; S8121, 2 s, SW of Struis Bay (34° 46.6' S; 20° 09.4' E), 34 m; S3557, 1 s, False Bay (34° 11.2' S; 18° 35.8' E), 40 m; B8224, 5 s, E. Cape, off East London (33° 04.9' S; 27° 54' E), 70 m; A3454, 4 s, False Bay, Muizenberg; B7690, 1 s, Port Elisabeth; B7677, 1 s, Port Elisabeth, Humewood Beach; S6353, 3 s, Agulhas Bank, W of Martha Point (34° 29.5' S; 20° 33.3' E, 28 m; V186, 3 s, 3 s, Agulhas Bank, W of Martha Point (34° 24.8' S; 20° 53.4' E, 31 m; C4677, 1 s, Transkei, of Qolora (32° 39.7' S; 28° 28.2' E), 50 m; B7870, 1 s, E. Cape, off East London (33° 01.0' S; 27° 57.3' E), 30 m; B8466, 7 s, E. Cape, off East London (33° 06.2' S; 27° 52.4' E), 70 m; E8887, 2 s, Zululand, off Matigulu River mouth (29° 21.6' S; 31° 57.1' E), 300 m; S9109, 1 s, SW Cape, SE of Cape Infanta (34° 24.8' S; 20° 53.4' E), 31 m; C4309, 1 s, Transkei, off Stony Point (32° 32.8' S; 28° 38.2' E), 70 m; C3467, 1 s, Transkei, Kei River; S3624, 3 s, Cape, off Simonstown (34° 10.7' S; 18° 28.4' E), 31 m; E8940, 1 s, Zululand, off Matigulu River mouth (29° 22.2' S; 31° 57.2' E), 350 m; A3456, 4 sp, Fish Hock; 9068, 2 s, Jeffreys Bay; B7657, 2 s, Durban; A3455, 44 s, False Bay, Simonstown dredgings; B2887, 47 S, Pondoland Coast; S8443, 1 sp, False Bay, SE Seal Island (34° 11.5' S; 18° 37.1' E), 43 m; W1094, W1096, 2 sp with eggs, E. Cape, off East London (33° 06.8' S; 27° 51.4' E), 10 m.

Description: The shell (Figs. 1-8) has been described in TOMLIN (1931) and KILBURN AND RIPPEY (1982). The color may be white, pink, light brown or violet, and the surface is usually smooth, but some shells from deeper water from Zululand have some spicules. Sometimes, its external surface is undulating towards the sutural depression. Protoconch (Figs. 12, 13) with about 1½ whorls, a diameter of about 900 µm, and a nucleus with a diameter of 85-100 µm; the protoconch surface is totally smooth. A few radial lines appear in the teleoconch of some shells, near the protoconch. Dimensions: up to 29.0 mm (in lot 9068).

Soft parts: No live material was examined, but some lots had been preserved in alcohol. Two males (10.3, 11.1

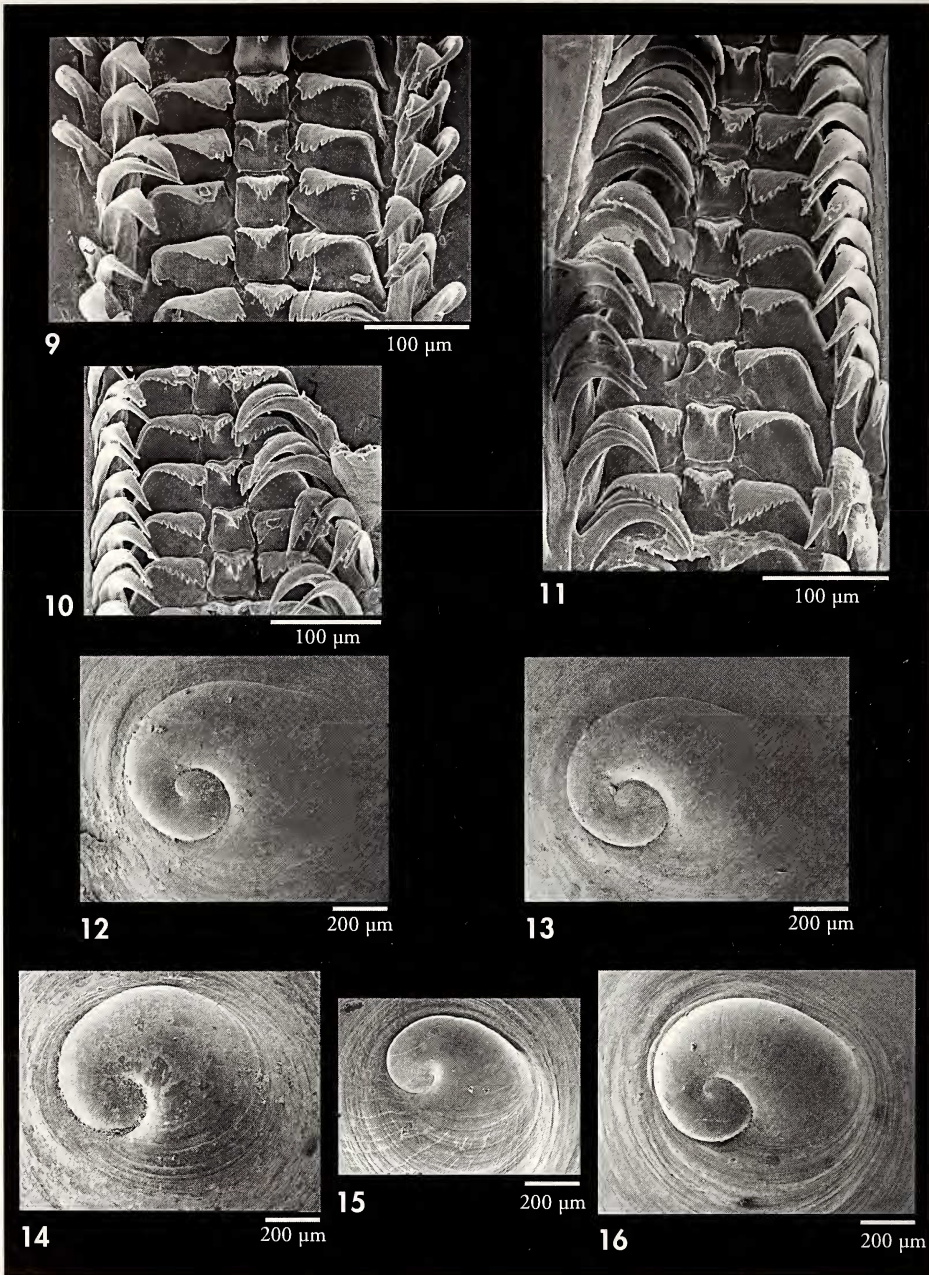
and 10.3 mm) with dry soft parts were hydrated in water with soap, and show that the animal (Figs. 17, 18) has a similar aspect to that of *C. chinensis* from Europe. Only the penis (Fig. 19) seems to be different: it was placed behind the right tentacle, being elongated, apparently flat, and placed on the dorsum of the animal and towards the posterior part. The tip is a little wider and finishes in a fine prolongation. Two females of 13 and 15 mm examined, have a small vestigial penis, elongated and sharp pointed without any wider part.

Radula (Figs. 9-11) taenioglossate; rachidian tooth narrow and with a prominent central cusp on the edge, with 4, sometimes 5-6, smaller cusps at each side. Lateral tooth with a prominent and a little wider cusp at the con-



Figures 1-8. *Calyptraea capensis*. 1-3: 13.4 mm, Cape St. Blaize, 88 m (NM W1093); 4-6: 13.5 mm, Saldanha Bay (NM 6025); 7, 8: holotype, 10.2 mm (MNW).

Figuras 1-8. *Calyptraea capensis*. 1-3: 13,4 mm, Cabo St. Blaize, 88 m (NM W1093); 4-6: 13,5 mm, Bahía Saldanha (NM 6025); 7, 8: holotipo, 10,2 mm (MNW).



Figures 9-11. Radula of *Calyptraea capensis*. 9: female, specimen of 13.8 mm (NM W1093); 10, 11: males of 11.1 and 10.3 mm (NM S8593). Figures 12-16. Protoconchs. 12, 13: *C. capensis*, off East London; 14: *C. chinensis*, Vigo; 15: *C. inexpectata*, Guinea-Conakry; 16: *C. africana*, Ivory Coast.

Figuras 9-11. Rádula de Calyptraea capensis. 9: hembra, ejemplar de 13,8 mm (NM W1093); 10, 11: machos de 11,1 and 10,3 mm (NM S8593). Figuras 12-16. Protoconchas. 12, 13: C. capensis, costa de East London; 14: C. chinensis, Vigo; 15: C. inexpectata, Guinea Conakry; 16: C. africana, Costa de Marfil.

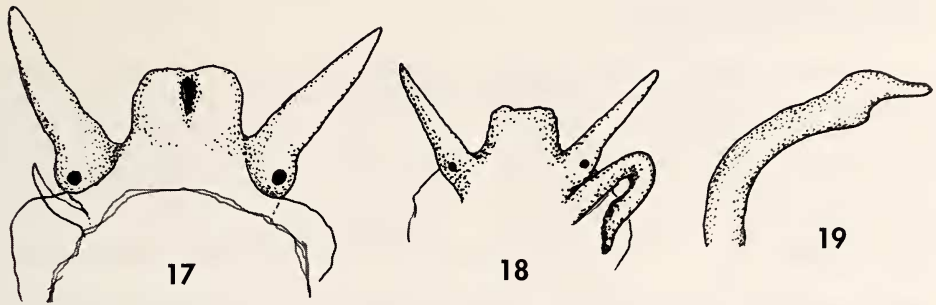


Figure 17-19. Drawings of soft parts. 17: detail of the head of a female with a 15 mm shell, ventral view; 18: a male of 10 mm with penis, dorsal view; 19: detail of the penis.

Figuras 17-19. Dibujo de las partes blandas. 17: detalle de la cabeza de una hembra con una concha de 15 mm, en visión ventral; 18: macho de 10 mm con el pene, en visión dorsal; 19: detalle del pene.

fluence of the internal and the external edges. Internal edge with few wide cusps (usually 1-2), while the external has between 5-7. Marginal teeth elongate, curved, sharp pointed; the internal ones with two edges with 4-6 cusps, while the external teeth have only 1-2 cusps on their internal part.

Spawn: several spawns were examined. They have a similar disposition to that of *C. chinensis*, the capsules being more irregular. A specimen of 15 mm diameter had a spawn of 12 capsules, each one between 2-3 mm, with between 20-60 embryonic larvae inside.

Remarks: The holotype has an eroded protoconch but all other characters fit well with most of the studied material. Some variations were found in the numerous shells examined: most shells are depressed, but some are extremely elevated, even higher than wide. We could not determine if these elevated forms are a different species, due to the lack of protoconch in the specimens examined.

The shell of *C. capensis* is rather different from the West African species. *C. chinensis* is less pointed at the apex of the shell, and has external prominences more frequently. The penis is different, with a spoon shape and a wide prolongation in opposition. The rachidian and marginal teeth of the radula are very similar, but the lateral teeth have more cusps (3-4) on the internal side; the pro-

toconch (Fig. 14) is wider, shorter (1 against 1½ whorls) and the nucleus larger; furthermore, the protoconch of *C. capensis* is smooth and the beginning of the teleoconch has some inconspicuous radial lines never present in *C. chinensis*.

C. africana Rolán, 2004 has a larger shell, more depressed, a little ovoid, usually translucent white, frequently with elevated external prominences; the penis is bilobed at its extreme, with one of the lobes formed by two masses together, and a narrow worm-like filament near the tip; the protoconch (Fig. 16) is rather similar, but the nucleus is somewhat smaller. The radula has more cusps in all the teeth.

C. inexpectata Rolán, 2004 has a smaller shell, sometimes with a squamous sculpture, white or brown in colour, but never violet; the protoconch (Fig. 15) is smaller, with a wider nucleus and several evident sulci at the beginning of the teleoconch. All the radular teeth have more cusps.

There are no problems in separating the remaining South African species of *Calyptraea*: *C. helicoidea* Sowerby, 1883, has a subscleriform profile, with a narrow but distinct umbilicus and the dorsal surface has strong, narrow, rather oblique radial ribs. *C. aurita* Reeve, 1859 also has an umbilicus, the columella is widely reflexed, and the protoconch has clear radiating spiral lirae (see BARNARD, 1963: 73).

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